

CLAIMS

1. An automatic guide apparatus for traffic facilities, comprising:
an input device for obtaining the circumstances around the traffic
5 facilities to be operated as an image, a voice or the like; a database
having image data, voice data or the like in connection with the
traffic facilities stored in advance; a comparison device for comparing
the image data, the voice data or the like obtained by said input
device with the image data, voice data or the like stored in said
10 database; a recognition device for recognizing and specifying, where
the results obtained by comparing the image data, the voice data or
the like coincided, the contents of the data; and an output device for
informing an operator or the like of the results recognized and
specified by the recognition device in a letter of character, an image,
15 a voice or the like.
2. The automatic guide apparatus for traffic facilities according to
Claim 1, further comprising: a storage device which, where the image
data, the voice data or the like corresponding to the objects obtained
by said input device are not present within said database, makes the
20 image data, the voice data or the like corresponding to new objects
correspond to a position on the map to newly store them in said
database; and a data update device which, where the image data, the
voice data or the like corresponding to the objects are different from
the image data, the voice data or the like stored in said database,

updates them to new image data, voice data or the like to store them in said database.

3. The automatic guide apparatus for traffic facilities according to Claim 1 or 2, further comprising a judgment device for carrying out
5 some judgment on the basis of the matter recognized or specified by said recognition device to inform an operator or the like of directions based on the judged results in a letter or character, an image, a voice or the like by said output device.

4. The automatic guide apparatus for traffic facilities according to
10 Claim 3, wherein said judgment device carries out some judgment on the basis of the matter recognized or specified by said recognition device, and directs said output device of a fixed action on the basis of the judged results to automatically actuate a brake device, a driving device or the like.

15 5. The automatic guide apparatus for traffic facilities according to Claims 1 to 4, wherein one or a plurality of devices are connected with other devices through communication lines.

6. An automatic guide apparatus for traffic facilities, traffic facilities to be operated being vehicles traveling on the road surface
20 such as motor vehicle, comprising: an input device for obtaining the circumstances around the own vehicle as an image, a voice or the like; a database having image data, voice data or the like in connection with the motor vehicle or the like such as road marks, road signs, traffic guide plates or the like stored in advance; a

comparison device for comparing the image data, the voice data or the like obtained by said input device with the image data, voice data or the like stored in said database; a recognition device for recognizing and specifying, where the results obtained by comparing the image data, the voice data or the like coincided, the contents of the data; and an output device for informing a driver or an occupant of the results recognized and specified by the recognition device in a letter of character, an image, a voice or the like.

7. An automatic guide apparatus for traffic facilities, traffic facilities to be operated being vehicles traveling on the track of a railroad train of the like, comprising: an input device for obtaining the circumstances around the own vehicle as an image, a voice or the like; a database having image data, voice data or the like in connection with the railroad vehicles or the like such as track marks, track signs, track guide plates or the like stored in advance; a comparison device for comparing the image data, the voice data or the like obtained by said input device with the image data, voice data or the like stored in said database; a recognition device for recognizing and specifying, where the results obtained by comparing the image data, the voice data or the like coincided, the contents of the data; and an output device for informing a driver or an occupant of the results recognized and specified by the recognition device in a letter of character, an image, a voice or the like.

8. An automatic guide apparatus for traffic facilities, traffic

facilities to be operated being the ship body or vehicle body navigating the two dimensional or three dimensional without the track of a ship, an airplane or the like, comprising: an input device for obtaining the circumstances around the own vehicle as an image, a voice or the like; a database having image data, voice data or the like in connection with the ship or airplane or the like such as marks, signs, the shape of harbors, the shape of an airport or the like stored in advance; a comparison device for comparing the image data, the voice data or the like obtained by said input device with the image data, voice data or the like stored in said database; a recognition device for recognizing and specifying, where the results obtained by comparing the image data, the voice data or the like coincided, the contents of the data; and an output device for informing a driver or an occupant of the results recognized and specified by the recognition device in a letter of character, an image, a voice or the like.

9. The automatic guide apparatus for traffic facilities according to Claims 1 to 8, further comprising: a plane development processing device comprising a plane image conversion device for converting perspective image data with respect to the circumstances around the traffic facilities obtained by said input device into plane image data having a perspective sense eliminated; a plane image recognition device for recognizing and specifying, on the basis of results obtained by comparing the converted plane image data with the image data stored in the database by said comparison device, the contents of said

data; an image content measuring device for various space physical amounts in connection with the objects recognized and specified by said plane image recognition device.

10. The automatic guide apparatus for traffic facilities according to
5 Claim 9, further comprising: a plane development processing device comprising an image content measuring device for measuring various space physical amounts in connection with the objects recognized and specified by said plane image recognition device.

11. The automatic guide apparatus for traffic facilities according to
10 Claim 9 or 10, wherein said plane image conversion device has a function of converting image data in the whole periphery of 360 degrees about the circumstances around the traffic facilities obtained by said input device.

12. The automatic guide apparatus for traffic facilities according to
15 Claims 1 to 11, wherein a traffic information detection device for obtaining the circumstances around the traffic facilities as image data, measuring data or the like is installed on the operating route of the traffic facilities so as to enable receiving the image data, measuring data or the like obtained by the traffic information
20 detection device.

13. The automatic guide apparatus for traffic facilities according to Claim 12, wherein said traffic information detection device ha a graphic device for making a computer graphic on the basis of the image data and measuring data obtained.

14. The automatic guide apparatus for traffic facilities according to Claims 1 to 13, further comprising: a position relation recognition device comprising an image obtaining portion for obtaining a picture image by the input device mounted on the traffic facilities, an image temporarily recording portion for recording the obtained picture image for a certain period, a clue-point automatic extraction portion for automatically extracting a clue point for taking a corresponding point within the image, a corresponding-point detection portion for taking out more than two images different in distance to seek for corresponding points of a plurality of clue points in the images, an input-device positional direction measuring portion for operating a position and a direction of the input device from a plurality of corresponding points detected, and an actual-measurement scale conversion portion for converting a relative distance value of a three dimensional coordinate of the input device position sought into an absolute distance value using an actual measurement value.

15. The automatic guide apparatus for traffic facilities according to Claim 14, wherein to said position relation recognition device is added a corresponding point three dimensional measuring portion for 3-dimension measuring a plurality of clue points from corresponding points in the images of a plurality of clue points to obtain a relation between them and a position of the input device as a three dimensional coordinate.

16. The automatic guide apparatus for traffic facilities according to

Claim 15, wherein to said position relation recognition device is added a three dimensional data recording portion for recording a three dimensional coordinate of a corresponding point obtained by said corresponding point three dimensional measuring portion.

5 17. The automatic guide apparatus for traffic facilities according to Claim 16, wherein to said position relation recognition device are added a three dimensional data read-out portion for reading out three dimensional data of a clue point accumulated in said three dimensional data recording portion obtained by being operated from
10 the three dimensional data recording portion at the time of operating the peripheries after the succeeding time, and a corresponding point comparison portion for comparing those data with image data obtained at the time of operations after the succeeding time to obtain a coincident point to thereby enhance operation accuracy of a position
15 of the traffic facilities.

18. The automatic guide apparatus for traffic facilities according to Claim 17, wherein to said position relation recognition device are added an absolute coordinate conversion portion for selecting an object whose absolute coordinate is known to a corresponding point to
20 impart an absolute coordinate to three dimensional data obtained in said input device position direction measuring portion and said corresponding point three dimensional measuring portion; and a coordinate synthesizing portion for synthesizing a three dimensional coordinate of a clue point present in a certain area to an absolute

coordinate system.

19. The automatic guide apparatus for traffic facilities according to Claim 18, wherein to said position relation recognition device are added a name attribute adding portion for corresponding a name and
5 an attribute of a clue point to position data of a clue point to record and store them, and adding names and attributes of the objects to which the clue points belong to the coordinate data of said clue points; and a database for relating a coordinate, a name and a an attribute of the added clue point into a map to write, record and store
10 them.

20. The automatic guide apparatus for traffic facilities according to Claim 19, wherein to said position relation recognition device is added a display portion for suitably displaying and informing an operator or the like of said various operation results.

15 21. The automatic guide apparatus for traffic facilities according to Claim 19, wherein to said position relation recognition device are added a circumstances judgment portion for automatically judging the circumferences of the traffic facilities from the periphery and the position relation of the traffic facilities to be operated by said various
20 operation results; and an automatic control portion for automatically carrying out an operation automatically suited to an object of the traffic facilities using the results of obtained by judging the circumstances.

22. The automatic guide apparatus for traffic facilities according to

Claim 21, wherein to said position relation recognition device are added a plural-input device image obtaining portion for, a plurality of input devices being installed, taking in images, and superposing a part or the whole of a field of view of the respective input devices; and
5 a calibration portion for, using both three dimensional distance measurement calculated from a difference in view caused by an input movement distance by a single input device and three dimensional distance measurement calculated from a distance in view between the input devices by a plurality of input devices, with three
10 dimensional distance data of clue points obtained by a view superposing system of a plurality of input devices as a reference length, calibrating three dimensional distance data obtained by a movement distance difference-in-view by the single input device movement to thereby convert it into an absolute distance.

15 23. The automatic guide apparatus for traffic facilities according to Claim 22, wherein to said position relation recognition device are added a shape attribute display portion for reproducing a three dimensional space for arranging and expressing a three dimensional shape of an object to which a clue point belongs in a three
20 dimensional computer graphic at a proper position in a coordinate system defined in a display screen to enable displaying even a name, an attribute, other objects, and the own vehicle in their display images; and a user interface portion for touching by a hand or clicking by a mouse on the image of the three dimensional computer

graphic showing various objects expressed in said display image, or displaying only the actual image, and touching by a hand or clicking by a mouse the intended object on the displayed actual picture to designate the intended object, thereby inputting data related to the intended object which displays and directs a name, a coordinate, a shape, and attributes of other related data of the object to enable directing the directed intended object various operations and actions.

24. The automatic guide apparatus for traffic facilities according to Claim 23, wherein to said position relation recognition device is added an external communication portion which is connected to other traffic facilities or other communication points through communication lines to receive and deliver information.